ABSTRACT


STUDENT: Gilles Tagne

DEGREE: Doctor of Philosophy

COLLEGE: Sciences and Humanities

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This project aims to characterize contaminants’ fate and transport in karstic aquifers in the Cumberland Plateau of Southeastern Kentucky, a region mainly covered by forests (~70%) and agricultural lands (~30%) and strongly influenced by changes in water quality driven by the effects of varying land use. The scope of this research is the critical zone, which examines flow paths from surface recharge through the vadose zone and saturated parts of the aquifers. More specifically, the impact of recent and past changes in land-use on the quality of the groundwater resource at various scales is investigated. Primary research methods include the use of multivariate statistical analyses and geochemical modeling tools to better quantify fluxes and understand spatial and temporal changes in the quantity of surface contaminants and nutrients transported from surface to groundwater.